




Supergen Bioenergy

USER Project – Clean Energy from Rice Straw

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Rice Straw in the Philippines

- 731 Mt of Rice Straw is produced annually worldwide, of which 91% is from Asia (11 Mt in the Philippines)
- Rice straw burning remains a key agricultural and environmental problem, despite farmers' awareness of its negative impacts on health and pollution.
- Energy security not an issue in this area, rather energy pricing is a barrier to development/investment
- Possibility of using rice straw for bioenergy will reduce burning and produce value added energy product - positive impacts for both rural development and environment.

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Key Barriers

- Infrastructural limitations and high silica content damages storage equipment raise cost to individual smallholders
- Cheaper to burn rice straw than the expensive process of hiring labourers to collect and transport it
- No direct perception of energy insecurity among farmers as energy use and related problems are embedded in other aspects
- Lack of understanding of stakeholder networks and social drivers that are imperative to business model development, social innovation and adaptation of new technologies

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Conclusions

- Overall there is vast potential in rice straw energy
- The three-year UK-funded IRRI-SUPERGEN project has sought to better understand the barriers and potential solutions for implementation
- More technical demonstrations now needed, along with innovative business models and supportive policies to create right enabling environment
- This key outcome of this project is the acquisition of extra funding sponsoring additional work on the opportunities identified here

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Outputs – Capacity Building

- Institutional expertise development
  - Launchpad for future collaboration
- Research output
  - Multiple reports and two journal papers

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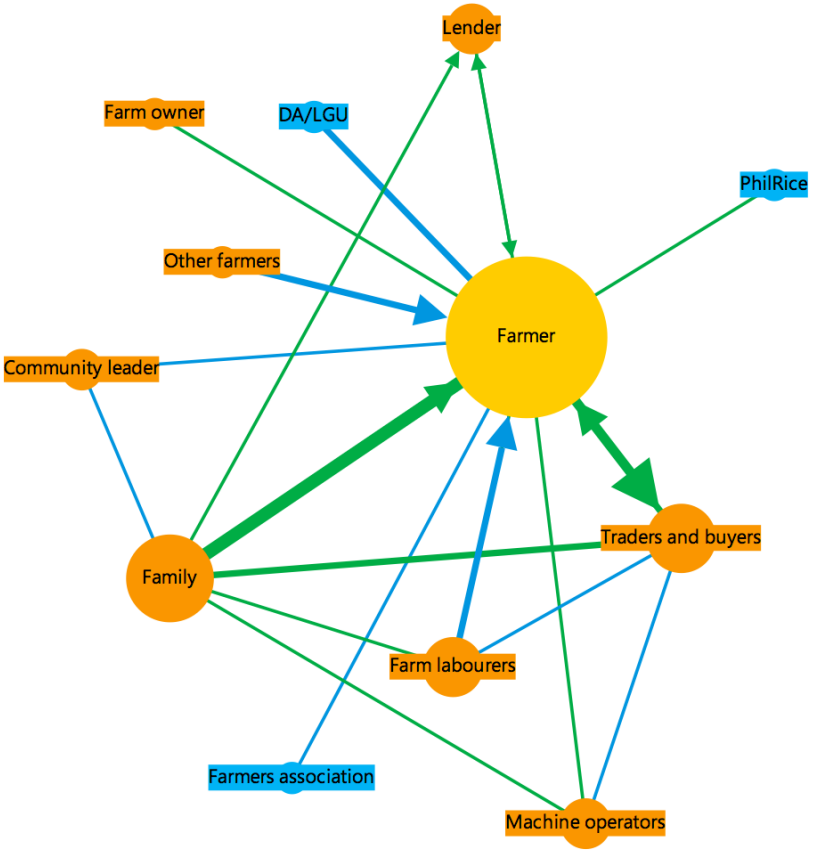
Funding – PhD: Decision Making Pathways



LEGEND:

- People
- Organisations and institutions
- Information link
- Decision-making link
- One-way flow (w/arrow head)
- Two-way flow (no arrow head)

Size of circle = number of connections
(i.e., bigger circles have more connections)

Width of flow = frequency of interaction
(i.e., thicker lines/arrows mean more frequent interactions)

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Funding - Laguna pilot scheme




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Outcome – Governance Systems

Table 1. Identified policy instrument scores for each of the seven study nations.

	National straw management strategy	Prohibition of open burning	Air quality plan	Fossil fuel subsidies	Agri-business support	Farmer engagement	Information sharing	Bioenergy support	Straw use research
China	5	5	5	5	5	5	3	5	4
Thailand	4	1	4	4	2	5	5	4	5
India	2	2	2	4	4	2	4	5	3
Bangladesh	1	3	3	1	4	3	4	5	3
Philippines	1	4	2	4	1	3	2	3	4
Vietnam	1	0	0	1	3	1	3	2	4
Indonesia	0	0	1	1	2	3	1	1	2
	0: None 1: ASEAN agreement ratified 2: Committee meetings 3: Strategy in development 4: Strategy in place but no targets or monitoring 5: Strategy in place with targets & delivery timeline	0: None 1: Seasonal regional ban 2: Year-round regional ban 3: National ban with very low enforcement 4: National ban with partial enforcement 5: National ban with widespread enforcement	0: None 1: Regional plans 2: National standards & monitoring but no strategy 3: National plan recommending actions but not implemented 4: National plan to mitigate open burning 5: National plan to prevent/mitigate all pollution sources	Consumption subsidy as a proportion of total supply costs: 0: ≥40% 1: 40–30% 2: 30–20% 3: 20–10% 4: 10–5% 5: ≤5%	0: None 1: Promotion of private investment only 2: Third-party finance 3: Tax relief on equipment 4: Government-funded micro-credit 5: Subsidies for projects using waste resources	0: None 1: Regional efforts to reduce burning 2: Education on dangers of burning 3: Demonstrations of alternative uses 4: Farm visits 5: Diverse continuous engagement by multiple institutions	0: None 1: Extension system only 2: Link between research & extension system 3: Rural development policy includes information sharing 4: Two active mechanisms 5: ≥3 active mechanisms	0: None 1: Tax relief on equipment 2: Biomass feed-in tariff 3: Small-scale biomass feed-in tariff 4: Small-scale biogas feed-in tariff 5: Off-grid biogas support	0: None 1: Single project 2: Single project exploring environmental impacts 3: Project series 4: Ongoing projects 5: Research projects actively encouraged

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My Research

- Examine current state of bioenergy present in Malawi
- Investigate ways in which bioenergy could benefit this region specifically, with emphasis on methods best suited to local demand.
- Use this knowledge to create a funding strategy/roadmap for international investment both governmental and NGO basis that would best stimulate and maintain economic growth but also provide a solution to rural energy poverty and provide added income/add value for all stakeholders

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Questions?

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